

REMARKS

By the present amendment and response, independent claims 1, 8, and 15 and dependent claim 3 have been amended to overcome the Examiner's objections and claims 4, 9, and 17 have been canceled. Thus, claims 1-3, 5-8, 10-16, and 18-20 remain pending in the present application. Reconsideration and allowance of pending claims 1-3, 5-8, 10-16, and 18-20 in view of the following remarks are requested.

The Examiner has rejected claims 1-20 under 35 USC §102(b) as being anticipated by U.S. patent number 5,886,393 to Merrill et al. ("Merrill"). For the reasons discussed below, Applicant respectfully submits that the present invention, as defined by amended independent claims 1, 8, and 15, is patentably distinguishable over Merrill.

The present invention, as defined by amended independent claims 1 and 8, teaches, among other things, a first end of a bonding wire being bonded to a source bond pad (claim 1) or a third semiconductor die bond pad (claim 8) and a second end of the bonding wire being stitch bonded to a stud bump, where the stud bump is situated on a destination bond pad (claim 1) or a second semiconductor die bond pad (claim 8). As disclosed in the present application, after a ball has been formed at an end of a bonding wire, the ball is bonded to a destination bond pad situated on a top surface of a semiconductor die. As disclosed in the present application, after the ball has been bonded to the destination bond pad, the bonding wire is cut above the bonding point, leaving a stud of bonding wire, i.e. a stud bump, remaining on the destination bond pad. As further disclosed in the present application, a first end of a bonding wire is connected to a source

bond pad situated on the top surface of the semiconductor die by a ball bond and a second end of the bonding wire is stitch bonded onto the stud bump on the destination bond pad.

As a result of stitch bonding the bonding wire to the stud bump, the present invention achieves greater bonding wire loop height and an increased control over the loop height of the bonding wire, which allows the length of the bonding wire to be accurately determined. Since the inductance of an inductor is generally proportional to the length of the inductor, by utilizing the bonding wire to form an inductor, the present invention advantageously achieves accurate control over the inductance of the bonding wire by accurately controlling the loop height of the bonding wire. Thus, by utilizing a bonding wire to form an inductor, the present invention advantageously provides an inductance that can be adjusted or fine-tuned by appropriately increasing or decreasing the loop height of the bonding wire that forms the inductor. Additionally, the invention's inductor does not require additional space on the semiconductor die, since the inductor advantageously utilizes freely available space on the top surface of the semiconductor die.

In contrast to the present invention as defined by amended independent claims 1 and 8, Merrill does not teach, disclose, or suggest a first end of a bonding wire being bonded to a source bond pad (claim 1) or a third semiconductor die bond pad (claim 8) and a second end of the bonding wire being stitch bonded to a stud bump, where the stud bump is situated on a destination bond pad (claim 1) or a second semiconductor die bond pad (claim 8). Merrill specifically discloses bonding wires 173 extending between bonding terminal pads 172, which are situated on surface 129 of IC chip 128. See, for

example, column 6, lines 51-60 and Figure 5 of Merrill. In Merrill, bonding wires 173 are connected with bonding terminals 172 by first forming a ball bond at the ball bonding portion of one bonding pad using an initial end of the bonding wire, extending the bonding wire to its destination terminal, and forming a stitch bond at the stitch bonding portion of a second bonding pad. See, for example, Merrill, column 7, lines 11-17.

Thus, in Merrill, one end of a bonding wire is ball bonded to a first bonding pad and the other end of the bonding wire is stitch bonded to a second bonding pad. However, Merrill fails to teach, disclose, or suggest forming a stud bump on a bonding pad and stitch bonding one end of a bonding wire to the stud bump on the bonding pad, which achieves the advantages provided by the present invention as discussed above. Furthermore, Merrill does not even mention a stud bump or provide any motivation for utilizing a stud bump.

For the foregoing reasons, Applicant respectfully submits that the present invention, as defined by amended independent claims 1 and 8, is not suggested, disclosed, or taught by Merrill. Thus, amended independent claims 1 and 8 are patentably distinguishable over Merrill and, as such, claims 2-3 and 5-7 depending from amended independent claim 1 and claims 10-14 depending from amended independent claim 8 are, *a fortiori*, also patentably distinguishable over Merrill for at least the reasons presented above and also for additional limitations contained in each dependent claim.

The present invention, as defined by amended independent claim 15, teaches, among other things, forming a stud bump on a destination bond pad, bonding a first end

of a bonding wire to a source bond pad, and stitch bonding a second end of the bonding wire to the stud bump. For the same reasons as discussed above, the invention, as defined by amended independent claim 15, is not suggested, disclosed, or taught by Merrill.

Thus, the present invention, as defined by amended independent claim 15, is also patentably distinguishable over Merrill and, as such, claims 16 and 18-20 depending from amended independent claim 15 are, *a fortiori*, also patentably distinguishable over Merrill for at least the reasons presented above and also for additional limitations contained in each dependent claim.

Based on the foregoing reasons, the present invention, as defined by amended independent claims 1, 8, and 15, and claims depending therefrom, is patentably distinguishable over the art cited by the Examiner. Thus, claims 1-3, 5-8, 10-16, and 18-20 pending in the present application are patentably distinguishable over the art cited by the Examiner. As such, and for all the foregoing reasons, an early allowance of claims 1-3, 5-8, 10-16, and 18-20 pending in the present application is respectfully requested.

Respectfully Submitted,
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